

US Technologies Sought by the USSR

<u>Technologies Strictly Denied</u>	<u>Use</u>	<u>Remarks</u>
Aircraft Turbine blades for large thrust, fuel efficient, high by-pass ratio fan jet engines	Civil and Military	Soviets need materials and processes to produce turbine blades that will withstand higher temperatures. US turbines blades operate at about 400°F higher than Soviet blades and give 15-20% reduced fuel consumption in high by-pass transport engines. Moreover, the higher temperature engine can reduce engine weight by 10 to 15% for fighter use.
Electronic engine controls	Civil and Military	Tied into central on-board computer to optimize fuel consumption for all conditions of load, altitude, speed, etc. by continuous adjustment of engine.
Semiconductor manufacturing equipment	Civil and Military	The equipment the Soviets seek is available in Japan and Western Europe. US depends on COCOM control to prevent Soviet acquisition of this equipment which is key to high volume production of large scale integrated circuits.
Computer Technology Storage devices and other peripherals	Civil and Military	Principally manufacturing technology for magnetic disc memories, and communications and remote user devices. Used in command and control systems.

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Microprocessor production technology	Civil and Military	Microprocessors are used in missile guidance systems as well as in many civilian products, including machine tool controls.
Software for timesharing and multiprocessor systems	Civil and Military	US tries to deny software applicable to military systems (e.g., command and control).
Application software	Civil and Military	Weapon design programs are denied.
Superconducting magnets	Civil and Military	Technology ultimately may lead to development of high powered new weapons (e.g., laser or particle beams). Soviet technology for super conducting magnets is behind US and does not permit production of small field-portable MHD (Magneto-Hydro-Dynamic) generators for development of weapon systems. Soviets lag in development of special magnetic wire, precision fabrication technology, and ability to liquify, store, and transport helium.

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Technologies Exported in Exceptional Cases	Use	Remarks
Air Traffic Control Systems (ATC) Civilian	Civilian	Some components of advanced ATC systems are applicable to command and control systems for air defense. The Univac system, without the military related components, was licensed for sale to the USSR for the Moscow area because prevention of air accidents is a humanitarian issue. However, Soviets bought a cheaper system from Sweden (Stansaab system).
Large computer systems (in excess of 32 million bits/second)	Civil and Military	Large computers are necessary to handle the large volumes of data and the numerous mathematical operations involved in weather forecasting, management of large enterprises, data reduction in nuclear research. They are also required for air defense systems, nuclear weapon design and ABM systems. Large US computers have gone to the Kama Truck Plant and to Aeroflot for seat reservation management.

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Electronic instruments Oscilloscopes, wideband recorders	Civil and Military	The USSR likes our wide bandwidth oscilloscopes and magnetic tape recorders. They are widely used for test and control of quality in electronics production. They are useful in gathering telemetry from missile tests and for nuclear weapons testing and simulation.
<u>Technologies sought; not denied</u>		
Petroleum Equipment	Civilian	
High capacity pumps, drill pipe and bits, offshore rigs		New conditions in Soviet oil explora- tion and production call for advanced equipment in which US is world leader. Need to expand output from old fields calls for high capacity pumping equip- ment and gas - pressurization of older geologic structures to restore high rates of flow.  Need to drill deeper and faster calls for better drill pipe and bits.  Soviets need for offshore quipment to drill in deepwater in the Caspian and Okhotsk Seas. They have very little experience in this field, and of four deep water rigs, only one is capable of drilling in water as deep as 90 meters.

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Chemical production equipment	Civilian	The Soviets were late starters in many areas of chemical production and have had to import many kinds of chemical machinery including complete plants. In 1971-75 alone, the USSR imported \$1.6 billion of chemical equipment from the West. Purchases continue at a high level with US firms currently negotiating to supply complete plants for: synthetic rubber fiber glass and fiber glass pipe agricultural chemicals, including fertilizers, pesticides, herbicides
Automotive production technology  Large dump trucks, 75-180 tons for mining	Civilian	The Soviets have new large programs for open pit mining of coal, copper and other ores. They are trying to bring new, large models of quarry trucks into production and want to use US manufacturers' experience. They are negotiating for a complete, US equipped, plant to produce electric wheels for trucks up to 180 metric tons payload. Value of the project is estimated at \$55 million. US is world leader in

US Technologies Sought by the USSR

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Large dump trucks, 75-180 tons for mining (Cont'd)		this area and has already sold 84 of the 180 metric ton trucks to the USSR for \$140 million.
Industrial type tractors	Civilian	The USSR has traditionally depended on equipping light agricultural tractors with construction implements to meet its needs for earth moving and construction. The USSR is just getting started on a program to produce large numbers of heavy tractors. Meanwhile, they are importing heavy tractors from the US and Japan for pipe laying, heavy construction (eg. railroad building) timber industry and mining.

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## Remarks:

The Director

DDI #2787-77

Attached is the response to the President's questions about US technologies that the Soviets want.

SAYRE STEVENS  
DDI

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